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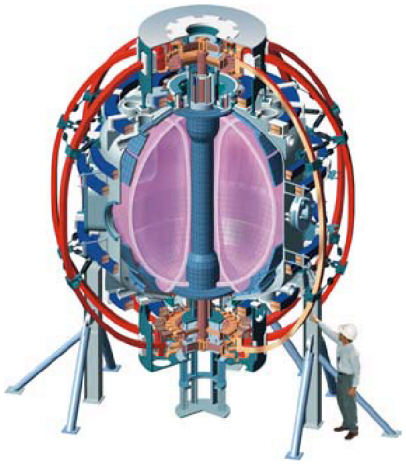

Update on ALIST Plans for NSTX

R. Kaita
for the NSTX Group

Plasma Facing Components Meeting
May 9-11, 2005
Princeton, NJ

PPPL PRINCETON PLASMA PHYSICS LABORATORY

Columbia U
Comp-X
General Atomics
INEL
Johns Hopkins U
LANL
LLNL
Lodestar
MIT
Nova Photonics
NYU
ORNL
PPPL
PSI
SNL
UC Davis
UC Irvine
UCLA
UCSD
U Maryland
U New Mexico
U Rochester
U Washington
U Wisconsin
Culham Sci Ctr
Hiroshima U
HIST
Kyushu Tokai U
Niigata U
Tsukuba U
U Tokyo
JAERI
Ioffe Inst
TRINITI
KBSI
KAIST
ENEA, Frascati
CEA, Cadarache
IPP, Jülich
IPP, Garching
U Quebec

Outline

1) NSTX Module Concepts

2) Project Position on Module Program

3) Activities Certification Committee Meeting

4) Present Boundary Physics Plan

5) Budget and Schedule Issues

NSTX Module Concepts

[0) Lithium Pellet Injection - in progress]

1) Module A (Phase I): Lithium deposition on graphite - divertor and/or center stack

2) Module A (Phase II): Lithium deposition on less permeable substrate - divertor and/or center stack

3) Module B: Flowing liquid lithium divertor module

Project Position on Module Program

- NSTX committed to Module A (Phase I)
  - Lithium evaporation on carbon part of baseline program
- Commitment to Module A (Phase II) contingent on Phase I results
  - Effect on recycling and edge plasma parameters observable but transient with carbon substrate
  - Results consistent with intercalation of lithium in carbon
- Decision point for Module B presently scheduled for FY07

Activities Certification Committee Meeting

- M. Ulrickson and NSTX personnel met with PPPL Activities Certification Committee (ACC)
  - Discussion occurred during NSTX PAC meeting last January
  - Presentations made on proposed lithium research by R. Kaita titled “NSTX Perspective on FY06 Particle Control and ALIST Module” and by M. Ulrickson (Sandia National Laboratories) titled “Safety Considerations for Lithium Handling.”
  - No fundamental objections raised to use of liquid lithium in NSTX
    - » Suggests importance of broad involvement in addressing safety concerns well before decision point for implementing systems like Module B

Present Boundary Physics Plan

Plasma Operations	FY 05	FY 06	FY 07

Wall Conditioning (Gas/plasma Boronization, Between-shot GDC)

- Li Pellet Injector
- Lithium Evaporator
- Hot-boronization
- Between-shots boronization
- Moveable GDC probe

- - Available
- - Base
- - Revised
- - Incremental
- - Decision Point

Power / Particle Control

- Divertor IR Camera (ORNL)
- Fast IR Camera (ORNL)
- **Divertor Cryopanel / Liquid Li Module**
- Divertor Probe
- Vert. Divertor Bolometer
- Horiz. Divertor Bolometer
- Div. Spectrometer

Fueling (In-board gas Injectors)

- Supersonic Gas injector
- Pellet injector in "suitcase" (ORNL)
- CT injector Lab. Test

Budget and Schedule Issues

- Present FY06 budget for NSTX does not include funds for *any* plasma operations
  - Eliminates detailed evaluation of lithium evaporation in Module B concept
- Delay in decision point likely for Module B past FY07